Unusual presentation of more common disease/injury

Post-traumatic headache: don't forget to test the supraorbital nerve!

Michael Stewart, Samantha Boyce, Ray McGlone

Emergency Department, Royal Lancaster Infirmary, Lancaster, UK

Dr Michael Stewart, michael@gradmedic.org

Summary

We present a series of four patients with neurological symptoms following head injury. In each case neuroimaging was normal, but careful examination demonstrated altered sensation over the distribution of the supraorbital nerve. We discuss traumatic supraorbital neuralgia and how it differs from the more commonly reported idiopathic form.

BACKGROUND

The supraorbital nerve is purely sensory and supplies the lateral aspect of the forehead, upper eyelid and conjunctiva. It is one of the terminal branches of the ophthalmic division of the trigeminal nerve. It exits the orbit via the supraorbital notch, following a superficial path under the surface of the skin. As a consequence of this superficial position, it is susceptible to damage from trauma in this area.

Trigeminal neuralgia involving only the first division of the nerve is well recognised, and manifests in the distribution of the supraorbital and supratrochlear nerves. Neuralgia affecting only the supraorbital nerve is rare, despite being the most commonly observed extracranial neuralgia of the terminal branches of the trigeminal nerve. The majority of cases that have been reported are of idiopathic supraorbital neuralgia.¹ These cases are frequently difficult to manage, persist for many years and may require surgical decompression of the nerve. The following case series highlights the existence and clinical course of traumatic supraorbital nerve neuralgia.

CASE PRESENTATION

Patient 1

A 36-year-old woman presented with left-sided headache and nausea, but no vomiting. She had suffered a head injury one week earlier when a ladder had fallen and hit her on her left forehead. She had no loss of consciousness and no amnesia of the incident. She had been taking regular doses of co-codamol and ibuprofen with no improvement in the headache. On examination, Glasgow Coma Scale was 15/15 and no neurological deficit was noted. The patient was very anxious as she had been admitted to the intensive care unit following a previous head injury. The patient was reassured, given tramadol, and advised to see her general practitioner (GP) to start diazepam if her symptoms did not resolve.

She re-attended the department having been sent by her GP 26 days after her first visit because of her persisting headache. On examination, she had reduced sensation to pinprick over the left forehead up to the vertex and allodynia to light touch in the same distribution. No other neurological deficit was found. Tenderness at the

supraorbital notch was present. A CT of the head was performed and was normal.

She had consulted her GP four times between the two emergency department attendances, with symptoms of pain and tenderness over the left frontal area of her forehead and an associated haematoma.

Patient 2

A 21-year-old woman presented after having tripped and fallen outside her house, sustaining an injury to her right forehead. She was complaining of 'hazy' vision, dizziness and pain in her head and left first metacarpal. She had vomited twice since the injury. On examination, she had a deep laceration on her right eyebrow, 3 cm in length. She was fully alert with no focal neurology. The laceration was sutured under local anaesthesia and she was sent home.

She presented to her GP 3 days later complaining of headache, dizziness and slight blurring of vision in her left eye. She returned to the emergency department after a further 14 days with persisting headache despite taking regular co-codamol and ibuprofen. On further questioning, she described the headache increasing in severity over the weekend, and she had vomited 5 times on Saturday and 5 times on Sunday. The vomiting had stopped by the time she was seen, but the frontal headache and dizziness persisted. On examination, sensation to light touch and pinprick was reduced over her right forehead to the vertex with tenderness at the supraorbital notch. A CT scan was performed and was normal.

Patient 3

A 15-year-old female had slipped on paper the previous night and hit the right side of her forehead on a radiator. She presented after vomiting at 08:15 hours that morning and becoming aware of swelling to the forehead. On examination, there was a reduced sensation to light touch and pinprick in the right supraorbital nerve distribution, tenderness at the supraorbital notch, with no other abnormal findings. She was sent home and advised to return in the case of any further vomiting. She returned the same day with

further vomiting and headache. A CT scan of the head was normal and she was again reassured and discharged.

Patient 4

A 49-year-old woman presented with constant pain in her head and visual problems after banging her head on a fridge door 12 days earlier. She had been vomiting for 3 days following the incident. The headache was described as a left frontal, throbbing headache with no aggravating or relieving factors. On examination, she had normal visual fields but reduced sensation to light touch and pin-prick over her left forehead to the vertex, with tenderness at the supraorbital notch. A head CT scan was normal.

INVESTIGATIONS

All four patients had a CT of the brain performed, which was normal in all cases.

DIFFERENTIAL DIAGNOSIS

- Concussion
- Post-concussion syndrome
- Intracerebral haemorrhage
- Supraorbital neuralgia.

TREATMENT

All four patients were given simple analgesia, an explanation of the condition and reassurance regarding its relatively benign nature. No additional treatment was required.

OUTCOME AND FOLLOW-UP

Following diagnosis and reassurance, none of the patients re-attended the emergency department with symptoms relating to their head injury. On written follow-up (responses received between 1 and 4 months after attending the department) all the patients reported full resolution of their symptoms.

DISCUSSION

All the patients included in this report were female and were between the ages of 15 and 49. Each of the patients had sustained a minor head injury to the forehead; the mean time to presentation following the injury was 4.5 days. The most common trigger for seeking medical review was described as persistent headache, although on further questioning this was consistently found to be pain in the supraorbital nerve distribution and so likely to be neuralgic pain. All patients denied any loss of consciousness after the incident, but most (three of the four) had vomited at least once, and the one patient who had not vomited did complain of nausea. Only one patient had a wound that required closure. On examination, tenderness and/or loss of sensation in the supraorbital nerve distribution was noted in all four patients, although in two cases this was not picked up or recorded until the second visit. All four patients had a CT of the head performed, all of which yielded normal results. The only treatments required by any of the patients were analgesics and an explanation of the diagnosis. The use of gabapentin could have been considered; however, usual practice in our area is for general practitioners to prescribe treatment for prolonged neuropathic pain in preference to dispensing from the emergency department.

Three-quarters of the patients attended the emergency department more than once before the diagnosis was

confirmed and they were reassured. One presented twice in the same day; a second re-attended the department 17 days after the first presentation with a number of GP attendances in the intervening period; the third was advised to attend by her GP after a 26-day interval.

The International Headache Society uses three diagnostic criteria for supraorbital neuralgia in the second edition of their International Headache Classification (ICHD-II):²

- Paroxysmal or constant pain in the region of the supra-orbital notch and medial aspect of the forehead in the area supplied by the supraorbital nerve
- Tenderness over the nerve in the supraorbital notch
- Pain is abolished by local anaesthetic blockade or ablation of the supraorbital nerve.

According to these criteria none of the patients in our series met a formal case definition as none were given local anaesthetic blockade or ablation. However, the other two criteria were met in all cases, and this would appear to be the likely diagnosis.

Supraorbital neuralgia was originally described as an idiopathic condition, where pain is often severe and prolonged. A 2001 study by Caminero and Pareja³ followed 18 patients with supraorbital neuralgia and observed a mean headache duration of 5.9 years. In 14 cases this was rated 'severe', 5 patients reported it as 'intolerable' at times, to the extent that 2 patients reported suicidal thoughts as a result.

Prolonged pressure over the nerve has also been reported to produce supraorbital neuralgia, often in swimmers or divers wearing goggles or masks. The headache in these cases has been reversible by using softer or better fitting goggles, or by abstaining from their use.^{4 5}

Our experience of patients with supraorbital neuralgia secondary to a single, acute, trauma over the nerve is consistent with previous reports that the majority of cases will resolve over time without the need for intervention.⁶ There are single case reports of prolonged, severe headache after trauma which required treatment with local anaesthetic nerve blockade, as described in idiopathic cases.³ In both cases this provided relief; however, the pain recurred in one patient who required a peripheral nerve stimulator.^{1 7} In both these patients the initial trauma was relatively severe—being struck by a metal hook and losing consciousness in one case, and a 9 m fall causing facial fractures in the other. In our series, no patients lost consciousness or suffered a fracture, and only one had a wound that required closure. The severity of the initial injury may correlate with the risk of prolonged symptoms in patients with traumatic supraorbital neuralgia.

Learning points

- Supraorbital neuralgia secondary to head trauma is a recognised condition that can easily be missed if a detailed examination is not performed.
- In most cases, the headache will resolve without need for treatment beyond reassurance and simple analgesia.
- A formal diagnosis requires a trial of local anaesthetic blockade of the supraorbital nerve. We suggest that this invasive procedure is unnecessary in the majority of cases given the tendency for resolution without treatment in traumatic cases.

Competing interests None.

Patient consent Obtained.

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